

# ***Big Thicket Computer Capabilities Driven by Resource Management Needs***

**By Robert J. Krumenaker**

Computers have been an integral part of daily life at Big Thicket National Preserve for almost two years. The driving force always has been resource management, but all of the Preserve divisions have integrated automated applications into their operations. If anything has been the hallmark of our success thus far, it has been the willingness of Preserve staff to embrace the new technology. While most of our usage is in office automation and canned software packages (word processing, database management, spreadsheets, etc.), we have also done in-house programming and development when necessary.

Management at Big Thicket has aggressively committed itself to computerization. Yet until recently, the system's growth (user interest, applications, software, and equipment) has been essentially unmanaged and unplanned. We have reached a plateau, however, where we have approached the limits of our Vector Graphic machine resources. (Vector Graphic 5005, with hard disk and three terminals, including a Tektronics graphic terminal.) It is an appropriate time to assess our computer efforts to date, determine our needs for the future, and plan just how to get from here to there. Since the computer world around us is changing so rapidly, anything longer than a two- to three-year plan would be too speculative. Using the Shenandoah model developed by the WASO Office of Information Management, and working closely with the ADP staff in the Southwest Regional Office, we are in the midst of that assessment now. We hope to have produced a draft Information Management Plan for Big Thicket National Preserve by March 1984. This plan will serve as an outline for phased system development and implementation,

and a justification document for additional procurement.

The overriding goal of information management at Big Thicket is to develop and maintain the capacity to process, analyze, and store *in-house* the data and text necessary to manage your own resources. We intend to be a fully functional independent node in the Southwest Regional computer system, with full communications capabilities. Within the Preserve, system management will be centralized in the Superintendent's office with each division or user responsible for the identification and specification of its own application needs. Whenever possible, off-the-shelf software programs will be used in lieu of custom programming.

Unlike most NPS field areas, we have the luxury of being able to look back on a couple of years of computer experience as we develop our information management plan. A few of the more interesting issues to be discussed in the plan may not be obvious to other parks just starting out. They are outlined here, with some of the thoughts that we need to keep in mind as we upgrade:

**System management.** Our current micro-based system runs itself — or so we thought until the resident expert transferred out and took most of the expertise with him. A well-run system may be able to run itself (for awhile at least) but only if careful planning has gone into standard operating procedures. Some of the many things that need to be considered — even for the smallest installation — include file access and security, disk space management, system backups, and software and equipment maintenance. Procedures need to be identified and *well documented*. Read that sentence again. It is impossible to over-document a computer system.

**Staffing.** The more sophisticated the computer

system, the more management energy that is required. Existing park staff at Big Thicket had much of the expertise that was necessary, but not the time (You may be surprised at how much ADP experience some of those underpaid, overworked rangers have.). Our solution: we have hired a Resource Management Computer Specialist, who devotes almost full time to information management and planning, application development, and system maintenance. We also have converted our most experienced clerk-typist to a Computer Operator, responsible for routine system operation and backup, ordering of supplies, and word processing and file management expertise. You're probably thinking this is extreme, and costly. Yes it is; but the alternatives are more costly. To make a full commitment to computerization and the productivity gains that are possible, you'll need qualified people to run the system.

**Training.** "The people element" is what dooms most computer system to failures. Computer users need adequate orientation, input, and training in order to feel that they are important elements in the "big picture." They may feel threatened if a terminal is put on their desks with the admonition to "interface." Sometimes, you just have to hold hands; other times let people run! We've found that people get hooked very quickly if they have the proper support and encouragement. The same folks, though, can be terribly frustrated without it. Don't be fooled into thinking that computers or word processors are easy to use. Most of them really are not, and it's up to the system manager to make the difference.

**Ergonomics.** The word's too new for our dictionary, but in essence it means that people (clerks, rangers, managers) work best when they are comfortable. Don't stop at green CRT screens and detachable keyboards. It's short-sighted to spend thousands of taxpayer dollars without looking at the productivity gains that can be made with improved lighting, firm operators' chairs, and work surfaces at the correct height. It's not much extra money, and it can really help.

The most interesting part of any computer system is the application of the technology to solving the problems of the organization. Office automation has already excited the clerk-typists and administrative staff at Big Thicket, as well as a number of the rangers and managers that find themselves writing memos, environmental assessments, and planning documents . . . not to mention those that prepare budgets. In short, just about everybody wants his own terminal. Our present three are slated to grow to at least five in FY84, and potentially more in future years. Word processing, spreadsheets, and business graphics will be more fully integrated and used by more people.

Resource management applications at Big Thicket, however, are the most exciting on the horizon and provide the stimulus for system growth and development. Three of the most interesting are described here — two that we've developed under the present computer environment, and one that will soon begin with an upgraded system:

**Plant List.** Big Thicket was set aside to preserve the most diverse flora in the entire NPS system. We have built a simple database of over 2600 records (one for each plant species), each containing 28 descriptive fields. If a researcher or visitor wants to know what are the names of all of the yellow wildflowers that bloom in September and occur in two of the Preserve's units but not in another, we can find out. The trick here was having the information available; but it's the computer tool that makes it accessible.

**Big Thicket National Preserve  
Hunter's Report**

Hunting Permit Number \_\_\_\_\_

Number of trips to the Preserve this season \_\_\_\_\_

Number of Animals taken:

Deer (Buck) \_\_\_\_\_ Deer (Doe) \_\_\_\_\_ Squirrels \_\_\_\_\_

Rabbits \_\_\_\_\_ Hogs \_\_\_\_\_

Failure to return this report by March 1 following the hunting season will disqualify you for a permit next year.

For information or assistance call (409) 839-2692.

**Big Thicket National Preserve  
Hunting Permit**

Hunting Permit Number \_\_\_\_\_

Only For the  
Expires \_\_\_\_\_

Leave this copy of the permit on the dashboard of your vehicle so that the permit number can be read from outside the vehicle whenever you are hunting in the Preserve.

You must obtain a copy of the Preserve's regulations and a map of the hunt area for the unit you selected

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**Hunting Permit System.** Big Thicket is one of the few NPS areas to allow regulated hunting, and just about the only public hunting area in east Texas. Consequently, demand is high; we have had as many as 6,000 applications for less than 2,800 permits. Last year, we instituted a procedure where applicants fill out a machine-readable form, which can be fed through a direct-input device to build a database without laborious keyboard entry. A simple lottery program selects the permittees. Custom-designed permit forms (which include two copies of the permit and a hunter survey card which must be returned to ensure a place in the next year's lottery) are printed and mailed. The whole package needs to pass through the printer but once, and avoids envelope stuffing entirely! Last year's experimental system will be improved this year by the procurement of our own optical mark reader and a friendlier driver program. With some minor refinements, this program could be adapted in other NPS areas for river trip or campsite permits.

**Geographic Information System.** No longer will computer maps and map analysis be the sole property of the Denver Service Center or the archaeologists at Chaco Canyon! We are on the verge of implementing the first phase of a MOSS (Map Overlay and Statistical System) program in which the major ecological, cultural, and management features of the Preserve and surrounding areas will be digitized. Mapping and map analysis will be done locally utilizing a Tektronics graphics terminal (acquired through GSA surplus) and a small multi-color plotter.

MOSS software is in the public domain, but it requires large CPU and disk space as well as considerable sophistication to implement. Our project is a pilot for the Southwest Region, and we are working closely with regional Natural Resource and ADP staffs (as well as the Fish and Wildlife Service's National Coastal Ecosystems Team, which developed the program) as we take the first steps. Our need for geoprocessing is acute, as we strive to address the cumulative impacts of oil and gas development within the Big Thicket. Fortunately, the largest hurdle — the resource mapping — already has been passed. We will phase in the MOSS project as our budget permits, but we expect to have a working analytical tool up and running for the most critical Preserve units within a year.

The needs and concerns discussed on these pages could be met by a variety of hardware and software combinations. As we develop and implement our Information Management Plan, we have made a real effort to identify needs and not vendors, since it is our requirements and goals that must drive our procurements, rather than the latest technology offered by a particular company. After assessing the options available, we have agreed with the assessment reached in the Southwest Region Computer Management Plan: Data General equipment will best meet our diverse needs, at the lowest cost. The specific configuration has yet to be worked out, but plans are underway to transfer the DG minicomputer now in Santa Fe to Big Thicket, once it has been replaced by the newer system described elsewhere in this issue. Regardless of equipment, however, Big Thicket will continue to serve as the lead area in the region in information management. It's a role we have worked hard to attain, and we look forward to sharing the lessons we learn with other park service areas.

*Krumenaker is Resource Management / Computer Specialist at Big Thicket NP.*